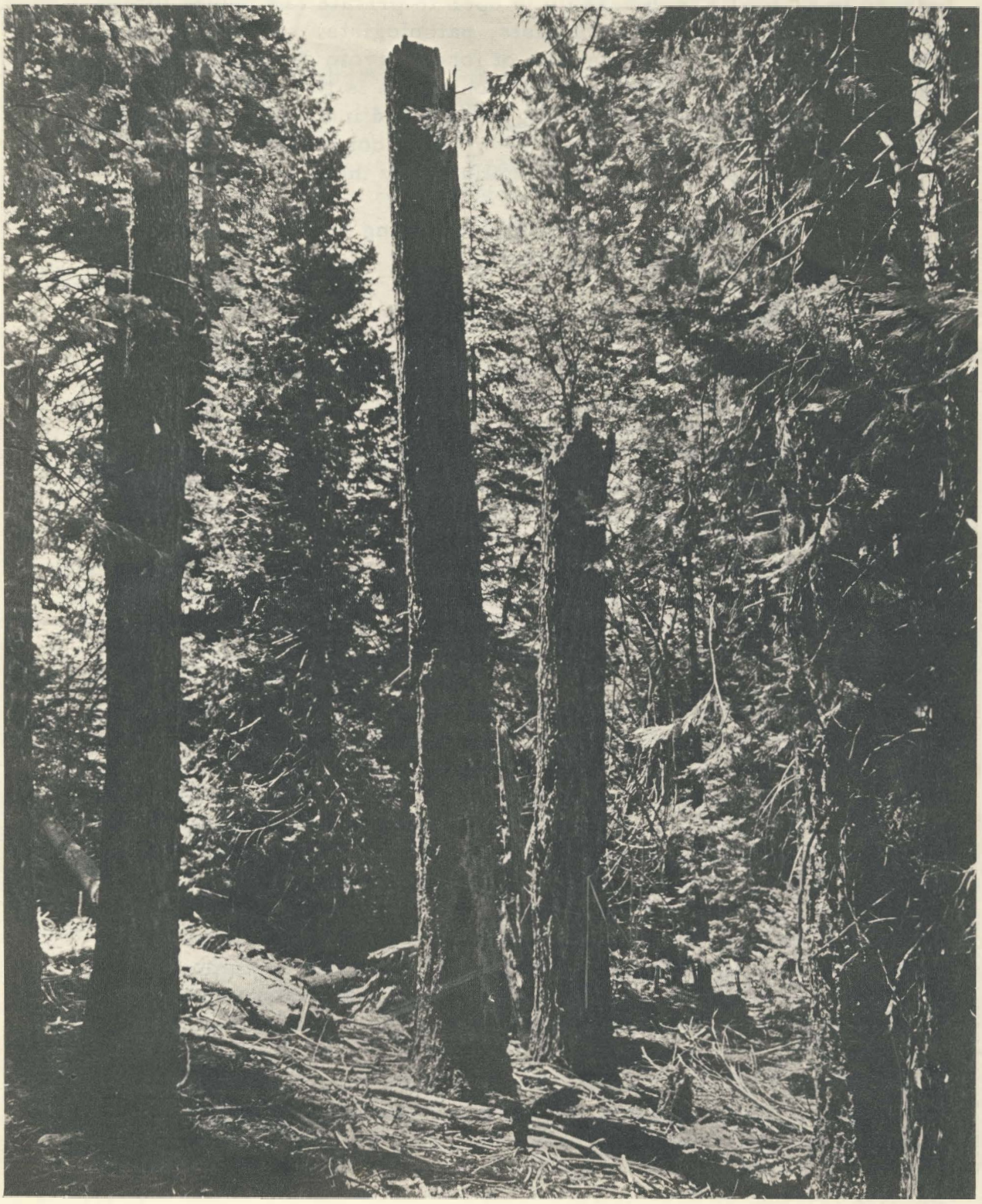
JOHN PRONOS



FOREST PEST CONDITIONS IN CALIFORNIA-1973

A PUBLICATION OF
THE CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL

THE CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL was founded in 1951. Its membership is open to private and public forest managers, foresters, entomologists, pathologists, zoologists, and others interested in the protection of forests from damage caused by animals, insects, and diseases. Its objective is to establish, maintain, and improve communication among groups and individuals -- managers, administrators, and researchers -- who are concerned with these problems. This objective is accomplished by these actions:

1. Coordination of detection reporting and compilation of pest damage information.

2. Evaluation of pest conditions.

3. Pest control recommendations made to forest managing agencies and owners.

4. Review of policy, legal, and research aspects of forest pest control, and submission of recommendations thereon to appropriate authorities.

The State Board of Forestry recognizes the Council as an advisory body with respect to pest protection matters. The Council is also a participating member in the Western Forest Pest Committee of the Western Forestry Conservation Association.

THIS REPORT, FOREST PEST CONDITIONS IN CALIFORNIA - 1973, is compiled for public and private forest land managers to keep them informed of pest conditions on forested land in California, and as an historical record of pest trends and occurrences. The report is based largely on information provided by the Statewide Cooperative Forest Pest Detection Survey; in 1973, 209 reports were received -- 120 for insects, 70 for diseases, and 19 for animal damage.

The report was prepared by the Forest Service and the Bureau of Sport Fisheries and Wildlife in cooperation with other member organizations of the Council. It was duplicated and distributed by the California Division of Forestry.

THE COVER PHOTO: Chronic mortality of white fir caused by the combined activity of insects (fir engraver beetles, Scolytus ventralis) and disease (Fomes annosus root rot). This mortality center on the Eldorado National Forest was examined in 1973 as a part of the Pest Damage Inventory.

Sacramento January 1974

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HIGHLIGHTS OF PEST CONDITIONS - 1973

STATUS OF INSECT PESTS. An outbreak of budworms on the Modoc National Forest became the largest defoliator epidemic ever recorded in California. White fir sawflies severely defoliated trees in several small areas in the northern part of the State. Various bark beetle outbreaks contributed to serious losses in both recreation and commercial forests.

The most encouraging trend in forest insect pest activity in 1973 was the continuing decline of Douglas-fir tussock moth defoliation.

STATUS OF DISEASE PESTS. Winter temperatures fell to record lows throughout the State in 1972-73, causing extensive frost damage to conifers and hardwoods.

Verticicladiella wagenerii was found infecting Douglas-fir in a new center on the north coast near Big Lagoon; at Sugar Pine Creek on the Eldorado National Forest, V. wagenerii was found on sugar pine, ponderosa pine, and Douglas-fir in the same center, a situation previously undetected.

Road deicing salts caused extensive damage to trees in the Lake Tahoe Basin, and there were reports of similar damage at Mammoth Lakes in the Inyo National Forest.

STATUS OF ANIMAL PESTS. Porcupine damage continues to be the major animal damage problem in forest plantations; damage in Humboldt and Modoc Counties was reported to be serious and increasing. Pocket gopher damage increased statewide, and deer browsing ranged from minor to severe throughout the State, with the most serious damage occurring in the north coastal areas.

STATUS AND CONTROL OF INSECTS

BUDWORMS, Choristoneura spp. Light to moderate defoliation of true fir and lodgepole pine exists throughout 148,000 acres on the Modoc National Forest. The outbreak encompasses almost all of the Warner Mountain range and a smaller area at Knox Mountain. Specimens from the infestation have been identified as C. lambertiana and C. viridis. The Forest Service mapped the area by helicopter and ground surveys, and established 13 population sampling plots; laboratory work to evaluate the samples is in progress.

A budworm infestation in lodgepole pine was detected at Sentinel Meadows in Mono County.

DOUGLAS-FIR TUSSOCK MOTH, Orgyia (Hemerocampa) pseudotsugata. Aerial and ground detection confirmed a continuing decline in Douglas-fir tussock moth activity. Only two active centers of infection could be found: at Skull Creek and at Jawbone Pass in Tuolumne County, infesting about 200 acres and 30 acres of trees, respectively. The Skull Creek infestation collapsed late in 1973 and dead timber was salvaged; the Jawbone Pass infestation was destroyed in the Granite fire.

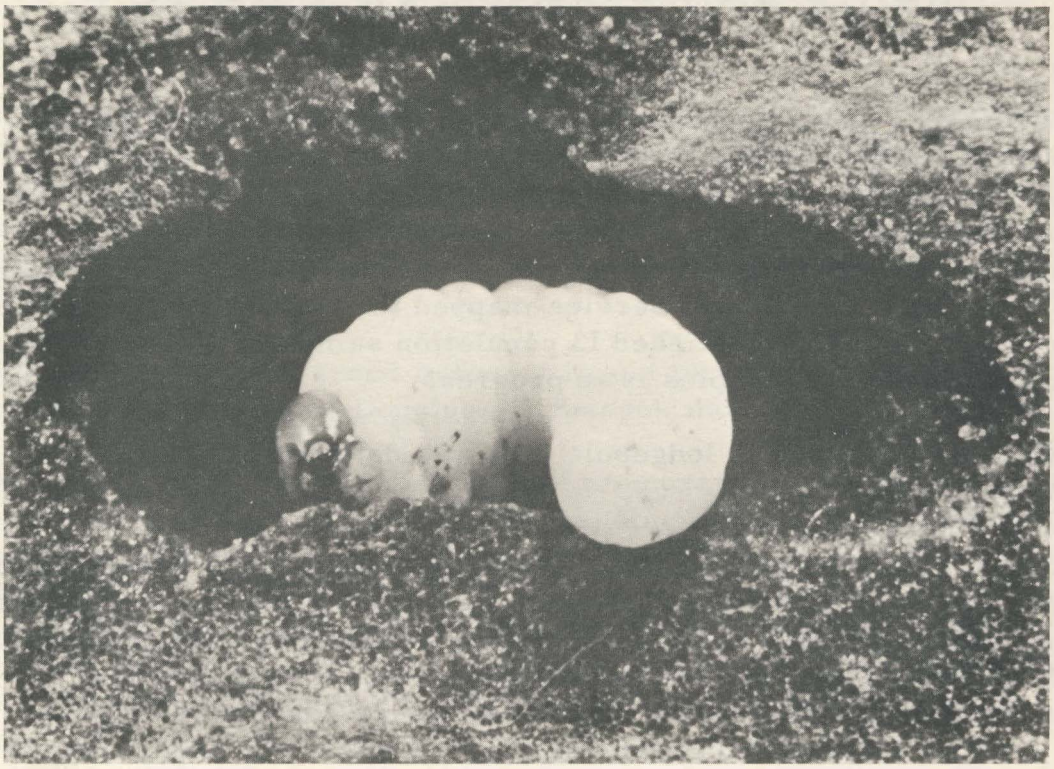
Observations of the rise and decline of the Douglas-fir tussock moth between 1970 and 1973 suggest that the virus disease of the moth did not play an important role in ending the epidemic.

LODGEPOLE PINE NEEDLE MINER, Coleotechnites milleri. High mortality of overwintering larvae, resulting from an unusually cold period during the winter, reduced the needle miner infestation in Yosemite Park. Consequently, heavily-used recreation sites were not seriously damaged. Nevertheless, the chronic outbreak remains viable and defoliation continues in more remote parts of the Park.

WHITE FIR SAWFLY, Neodiprion abietis. While the area of white fir sawfly defoliation declined since 1972, trees in several locations sustained serious damage. These included large spots east of Jackson Lake and south of Sierra City in Sierra County, and Buck's Lake and Blue Nose in Placer County.

Near Jackson Lake, Dichelonyx beetles feeding on young foliage substantially increased the injury to sawfly-infested trees.

GYPSY MOTH, Porthetria dispar. Detection of live specimens in several locations in northern California has caused concern. The transportation of viable egg masses on recreational vehicles and household items from the eastern United States presents a difficult quarantine problem for California. Detection efforts are being intensified.



Western pine beetle larva (16 times life size).

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae. The beetles continued to kill trees on the Plumas National Forest in Plumas County. More than 40 localized outbreaks, containing perhaps 3,000,000 board feet of dead and dying Douglas-fir, have been identified by aerial and ground surveys.

Efforts to control losses through salvage-logging have been thwarted by the steep, inaccessible terrain. So far, large-capacity helicopters have not been available for the job.

WESTERN PINE BEETLE, Dendroctonus brevicomis. Killing of ponderosa pine declined about 50 percent at McCloud Flats in Siskiyou County. The decline followed the destruction of 75 percent of the overwintering beetles by unusually cold weather, and was probably stimulated by improved timber management through thinning sales. The Forest Service ceased dispensing beetle attractants for the McCloud Flats Pheromone Study, but continued to monitor beetle populations and tree mortality.

Elsewhere in California the beetles continued to kill ponderosa pine at a normal level. Notable locations of activity were the following: French Creek in Siskiyou County; Soldier Mountain in Shasta County; Barnes Mountain in Fresno County; and the continuing epidemic around

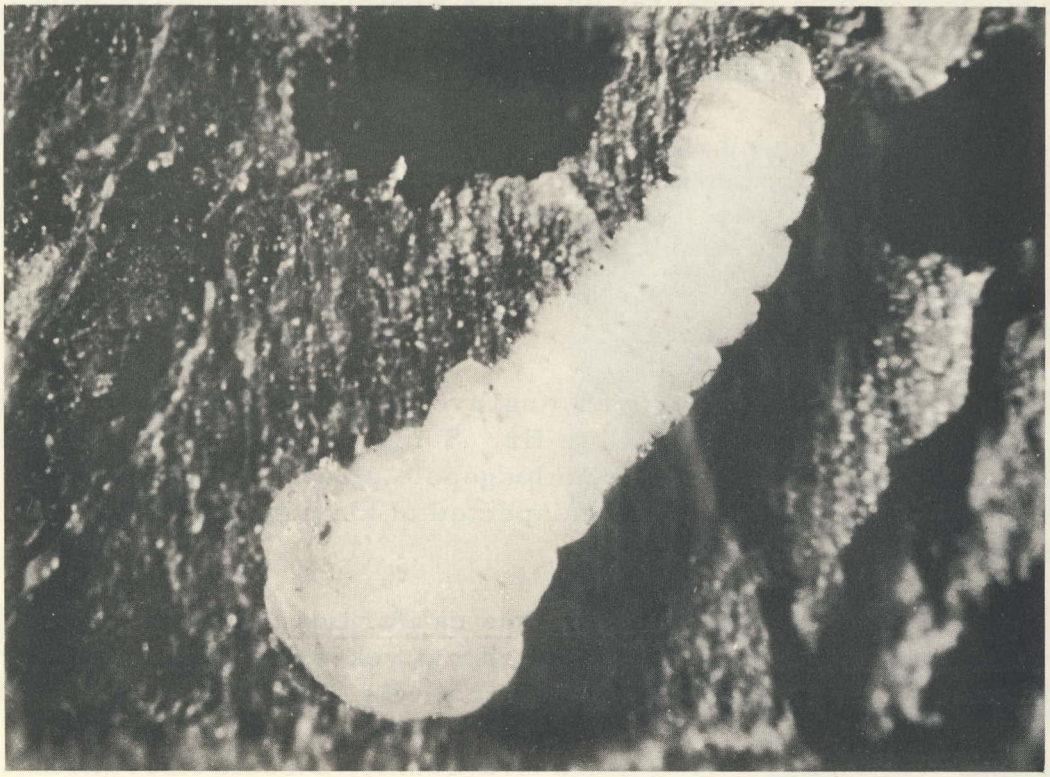
the Red Mountain Burn in Kern County. Suppression by salvage logging was conducted in most of these areas.

In southern California, western pine beetles were the major killers of ponderosa and Coulter pine, particularly near Lake Arrowhead in San Bernardino County. Maintenance control continues in several southern California forests.

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae. The population suffered severe cold-induced mortality in some areas during the winter of 1972-73. Spot surveys revealed a winter brood-kill of about 90 percent at Lake Tahoe and at Wrights Lake in El Dorado County, with a subsequent reduction of about 80 percent in tree killing during 1973. Nevertheless, the beetles continue to be important killers of lodgepole pine at Wrights Lake and at South Lake Tahoe.

At June Mountain and at Sherwin Bowl in Mono County, mountain pine beetle outbreaks developed in high elevation stands of lodgepole, western white, and whitebark pine. The beetles killed large sugar pine elsewhere, most notably in northern Butte and eastern Tehama Counties.

Direct-control was proposed for some major recreation sites.



Overwintering pre-pupa larva of the California flatheaded borer (6 times life size).

PRIMARY FLATHEADED BORERS, Melanophila spp. The California flatheaded borer, M. californica, killed thousands of Jeffrey pines in the Laguna Mountains of San Diego County. The beetle also attacked many Jeffrey pines in the Garner Valley of Riverside County, and at Piute Peak in Kern County.

Salvage-logging and maintenance control were carried out in the Laguna Mountains and at Garner Valley; salvage-logging was proposed for the Piute Peak infestation.

The fir flatheaded borer, M. drummondi, killed a large group of Douglas-fir trees near Junction City in Trinity County, killed a smaller number at Gasquet in Humboldt County, and killed scattered true firs in El Dorado County.

PINE ENGRAVER BEETLES, Ips paraconfusus and I. pini. Depredations in young pine stands throughout the State were the severest in many years. The worst problem developed in the Garner Valley of Riverside County, but significant infestations were reported from Yucaipa Ridge in San Bernardino County; Mosquito Road in El Dorado County; Dago Springs and Jelly Camp in Lassen County; Lake Britton and Willow Creek in Shasta County; and Fish Meadows and Deer Mountain in Siskiyou County. Scattered groups of killed trees were reported in northern Butte and eastern Tehama Counties, and in the Fort Jones and Scott Valley areas of Siskiyou County. On young ponderosa pine in several locations western pine beetles were found in association with pine engraver beetles. In most cases suppression was not recommended.

Spots of knobcone pine mortality were reported from several areas. Most of this damage is probably due to ips activity.

JEFFREY PINE BEETLE, Dendroctonus jeffreyi. The only serious infestation reported in 1973 developed in fire-damaged timber at Breckenridge, in Kern County.

OTHER BEETLES. Activity by fir engraver beetles, Scolytus ventralis, subsided to endemic levels on white fir. Some damage by a twig beetle, Pityophthorus sp., was reported on lodgepole pine. Roundheaded fir borers, Tetropium abietis, were suspected of killing firs in parts of El Dorado County.

BLACK PINE LEAF SCALE, Nuculaspis californica. The widespread infestation on sugar pine, reported in recent years in northern California, has declined to near-endemic levels. Unusually cold winter temperatures may have adversely affected the overwintering scale populations. Near Bass Lake in Madera County, a scale infestation persists in a roadside environment, seemingly encouraged by the application of road oil.

INSECTS DAMAGING PLANTATIONS AND YOUNG TREES. Grasshoppers devastated recently-established pine plantations at Iron Mountain in Trinity County and at Yellow Jacket and Cub Hill in Siskiyou County. At Iron Mountain the pest was identified as Oedaleonotus enigma. Forest Service breeding orchard plantings at Badger Hill in El Dorado County were protected from grasshopper damage with insecticides. The Trinity and Siskiyou County infestations may require spraying in 1974.

The infestations of the imported Nantucket pine tip moth, Rhyacionia frustrana -- reported in 1972 as the western pine tip moth, R. bushnelli -- continued unabated in southern California, primarily on Monterey pine. Four generations of the aggressive pest were reported in 1973. A delineation survey and some sort of containment or quarantine are needed to deal with this potentially destructive insect.

Cursory spot checking indicates that the Eucosma shoot moth, E. sonomana, is present throughout the eastside Jeffrey and ponderosa pine plantations north of Interstate 80.

The reproduction weevil, Cylindrocopturus eatoni, damaged pine plantations again in 1973, most conspicuously near Snow Tent Springs in Nevada County, Coon Rod Flats and Seven Mile Pit in Siskiyou County, and Mallum Ridge in Madera County. The pine needle sheath miner, Zelleria haimbachi, was active in scattered localities.

Larva of the roundheaded fir borer (2.2 times life size).

TABLE I

INSECT CONTROL ACTION RECOMMENDED BY THE COUNCIL - 1973

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INSECT CONTROL ACTION RECOMMENDED BY THE COUNCIL - 1973

INFESTATION AREA	ESTIMATED ACREAGE	COUNTY	INSECT	HOST	RECOMMENDED ACTION
NORTHERN CALIFORNIA COMMERCIAL AND RECREATIONAL FORESTS					
BARK BEETLES					
Deer Mtn.	100	Siskiyou	Ips	PP	Burn
June Mtn. & Sherwin Bowl	2,000	Mono	Dm	LP	Evaluate
McCloud Flats	7,000	Siskiyou	Db	PP	Salvage, thin and research
Plumas	1,000	Plumas	Dp	Df	Salvage
Red Mtn., Breckenridge, Piute Peak	30,000	Kern	Db,Dj,Mc	PP,JP	Salvage
South Lake Tahoe	150	El Dorado	Dm	LP	Salvage, thin and surveillance
Wright Lk.	300	El Dorado	Dm	LP	Spray
DEFOLIATORS					
Jawbone Pass	30	Tuolumne	Hp	WF	Evaluate and surveillance
Modoc	148,000	Modoc	Bw	WF,LP	Evaluate
Northern California	Unknown	Northern California	Na	WF,RF	Surveillance
Sentinel, Crooked and Wet Meadows	2,200	Mono	Cm,Bw	LP	Surveillance and research
Skull Creek	200	Tuolumne	Hp	WF	Evaluate and surveillance
PLANTATIONS AND EXPERIMENTAL AREAS					
East Side Plantation	Unknown	Northern California	Eu	PP	Survey and research
Established Seed Orchards	100	Northern California	Da,Rz,Zh	PP	Spray grafted trees five times a year
Plantations		Statewide	Rf,Cp,Gh	Hard pines	Surveillance and research
Seed Production Areas		Northern California	C&S	PP	Surveillance and research
STATE AND NATIONAL PARKS					
Anza Borrego State Park	500	San Diego	Db,Mc	CP	Surveillance
Cuyamaca Rancho State Park	8,000	San Diego	Mc,Db	JP,PP	Surveillance
Heart Bar State Park	1,300	San Bernardino	Dj	JP	Surveillance
Palomar State Park	1,500	San Diego	Db,Ips,Sv,Mc	CP,PP,WF	Surveillance
San Jacinto State Park	11,000	Riverside	Mc,Db	JP,CP,PP	Surveillance
Lassen Volcanic National Park	3,000	Shasta & Lassen	Dj,Db,Dm	JP,PP,SP,LP	Surveillance
Sequoia and Kings Canyon Natl. Park	8,500	Fresno	Db,Dm	PP,SP	Maintenance control*
Sequoia and Kings Canyon Natl. Park	400	Tulare	Cm	LP	Surveillance
Yosemite National Park	57,700	Mariposa & Tuolumne	Db,Dm,Dj	PP,SP,JP,LP	Maintenance control*
Yosemite National Park	100,000	Tuolumne	Cm	LP	Surveillance and research
SOUTHERN CALIFORNIA RECREATION FORESTS					
Arrowhead-Crestline	47,000	San Bernardino	Dm,Db,Ips,Dj	PP,CP,JP	Sanitation and maintenance control*
Arroyo-Seco District	3,000	Los Angeles	Db,Ips,Mc	PP,CP,JP	Sanitation and maintenance control*
Big Bear Valley	8,800	San Bernardino	Dj,Ips,Mc,Sv	JP,WF	Sanitation and maintenance control*
Corte Madera	1,600	San Diego	Db,Ips,Mc,Dv	CP,JP,PP	Surveillance
Idyllwild-San Jacinto	37,000	Riverside	Mc,Db,Ips,Dm	PP,CP,JP	Sanitation and maintenance control*
Julian-Pine Hills	12,000	San Diego	Db,Ips	CP	Surveillance
Laguna Mtn.	9,700	San Diego	Db,Mc	CP,JP	Maintenance control*
Lost Valley	4,000	San Diego	Db,Ips	CP	Maintenance control*
Mt. Baldy District	1,500	Los Angeles	Ips,Dj,Dm,Mc,Db	PP,JP,CP	Sanitation and maintenance control*
Mt. Pinos District	24,000	Ventura	Ma	Pe	Surveillance
Mt. Pinos District	7,900	Ventura & Kern	Mc,Ips	JP	Sanitation and maintenance control*
Ranger Peak-Figueroa Mtn.	700	Santa Barbara	Db,Ips,Dv	PP,CP	Maintenance control*
San Gorgonio District	25,000	San Bernardino	Db,Dj,Ips	PP,JP,CP	Sanitation and maintenance control*
Snow Valley-Big Bear	2,200	San Bernardino	C sp.	JP	Surveillance and research
Valyermo District	14,600	Los Angeles	Mc,Ips	JP	Sanitation and maintenance control*
Wrightwood	2,000	San Bernardino	Mc,Ips	JP	Maintenance control*

ABBREVIATIONS

INSECTS

Bw - Budworms	Dm - Mountain pine beetle	Na - White fir sawfly
C sp. - Jeffrey pine needle miner	Dp - Douglas-fir beetle	Rf - Nantucket pine tip moth
Cm - Lodgepole needle miner	Eu - Eucosma	Rz - Ponderosa pine tip moth
Cp - Pine resin midge	Gp - Grasshoppers	Sv - Fir engraver
C&S - Cone and seed insects	Hp - Douglas-fir tussock moth	Zh - Needle-sheath miner
Da - Fir coneworm	Ips - Pine ips	
Db - Western pine beetle	Ma - Pinyon needle scale	
Dj - Jeffrey pine beetle	Mc - California flatheader borer	

HOST

CP - Coulter pine	WF - White fir
DF - Douglas-fir	
JP - Jeffrey pine	
LP - Lodgepole pine	
Pe - Pinyon pine	
PP - Ponderosa pine	
RF - Red fir	
SP - Sugar pine	

* Maintenance control is defined as suppression measures applied continually or annually (seasonally) in an effort to keep tree losses at a tolerable level. Suppression measures may include logging, wood cutting, felling and burning or insecticide application on infested trees. Based on the Council's 1971 resolution it is recommended that chemicals be used only when non-insecticidal alternatives of suppression are not suitable.

STATUS AND CONTROL OF DISEASES

SIGNIFICANT CONDITIONS

ABIOTIC DISEASE. Frost damage to conifers and hardwoods was reported from throughout California following an exceptionally cold winter. Exotic species were damaged most conspicuously -- Australian blue gum (Eucalyptus globulus) were particularly hard hit. Potentially disastrous fire conditions developed from the accumulation of dead foliage, branches, and trees in the densely-populated Oakland and Berkeley hills in Alameda County, resulting in a declaration by the President of a major disaster situation. To mitigate the fire hazard, Federal funds were allocated to construct over 20 miles of 300-foot wide fuelbreak.

BLACK STAINING ROOT DISEASE, Verticicladiella wagenerii. Several new infection centers were found in Douglas-fir forests on the north coast near Big Lagoon. Previously, the disease was discovered infecting Douglas-fir on the Jackson State Forest, and infecting sugar pine, western white pine, and knobcone pine in the Six Rivers National Forest northeast of Gasquet.

For the first time in California, V. wagenerii was found killing three species -- sugar pine, ponderosa pine, and Douglas-fir -- within the same center. In all previous reports the fungus killed pines and Douglas-fir in separate centers only, even within mixed-conifer stands. This new infection center, approximately 20 acres in size, was found in Sugar Pine Creek on the Eldorado National Forest.

(More detailed information regarding this disease may be found in the following section, "Know Your Forest Diseases.")

FOMES ANNOSUS. In 1973 the Forest Service detected more new centers of Fomes annosus infection throughout the eastside pine type. Evaluation of the extent and severity of the infection will continue in 1974.

Data gathered by University of California pathologists indicates that Fomes annosus may also be a major killer and butt rot in the true firs of the Sierra Nevada. Preliminary evidence suggests that this is not a new problem, but a chronic condition only now being studied for the first time.

NURSERY DISEASES. At the Forest Service nursery near Placerville in El Dorado County, Botrytis cinerea killed many Monterey x knobcone pine seedlings, and killed the tips of ponderosa pine seedlings in storage.

Severe frost damage and subsequent sprouting of Australian blue gum in a populated portion of the Berkeley-Oakland hills in Alameda County.

At the Forest Service nursery in McKinleyville, in Humboldt County, there was some minor damage caused by the following fungi:

Roselinea herpotrichoides on 2-0 Douglas-fir;
Pythium spp. on containerized Douglas-fir;
Phomopsis lokoyae on containerized Douglas-fir;
Botrytis cinerea on coast redwood;
Sirococcus strobilinus on ponderosa and Jeffrey pine.

Extensive frost damage on Douglas-fir was reported from the California Division of Forestry nursery near Magalia.

ROAD DEICING SALTS. Road deicing salts caused extensive damage in the Lake Tahoe Basin. A survey conducted by the Forest Service and by the Pacific Southwest Forest and Range Experiment Station located more than 200 sites along the major highways within the Basin where damage attributable to deicing salts was evident. The sizes of the areas ranged from a single tree center to an area 0.3 miles long in which many trees were killed or damaged. Additional reports of salt damage were received from the Mammoth Lakes area of the Inyo National Forest.

SURVEYS

THE PEST DAMAGE INVENTORY. In 1972 the Forest Service began a survey to measure pest-caused damage in timber-producing forests, collecting tree mortality data on a 13,000-acre portion of the Stanislaus National Forest. Results were so encouraging that the survey was modified to become the Pest Damage Inventory, which was tested further in 1973 on a 100,000-acre portion of the Eldorado National Forest.

The Inventory is a source of data for the Forest Pest Evaluation System being developed by the Forest Service. It will provide data for timber management planning on the National Forests, and will lead to pest prevention and control recommendations for State and private forests. The Inventory has two immediate objectives: to measure pest-related chronic mortality, and to determine the pest/stand/site/host complexes that kill trees.

The Survey combines aerial photography and ground surveys. Aerial photos, providing stereo coverage in color, were taken of fifty 280-acre plots in June, 1972. Thirty-five of the randomly-selected plots were placed in the mixed-conifer type, eight in the pine type, and seven in the red fir type. The photographs were interpreted in stereo to identify groups of faded trees within the plots.

To determine the ground truth of the photo estimate, a field crew visited 142 of the mortality groups, measured the trees, and identified the pest complexes. They later revisited 74 of the dead tree groups and collected data on the stand and site conditions that might be associated with tree mortality. Data collection was completed late in October 1973. Basic data summaries and analyses -- totals, averages, and reliability estimates -- will be compiled early in 1974.

Tree mortality will be expressed as volume per acre per year for each timber type and for the entire survey unit. Volume loss figures will also be calculated for each pest complex and for each tree species within the type strata. The stand and site conditions that are associated with the damage will be described for each pest complex.

The Forest Service plans to expand the Pest Damage Inventory by surveying an entire forest in 1974.

The Pest Damage Inventory crew ground checks a group of dead trees: left, examining the base of a dead tree to ascertain the presence or absence of root-rotting fungi; right, locating a mortality group by means of color aerial photos.

EVALUATION OF FOMES ANNOSUS IN COMMERCIAL STANDS. The collection of Fomes annosus incidence and impact data in eastside pine type was extended to include the Plumas, Tahoe, Toiyabe, and Inyo National Forests. Additional information was collected on plots visited in 1972 to obtain a better estimate of the impact of this disease; data analysis is continuing through a system designed by the Forest Service.

BLISTER RUST SCOUTING. In 1973 a two-person crew scouted 60 miles of stream throughout the southern Sierra Nevada, examining sugar pines and ribes for white pine blister rust. New pine infections were found on North Crane Creek in Yosemite National Park, and on Shuteye Creek on the Minarets District of the Sierra National Forest; each center contained only one infected sugar pine. The Redwood Canyon infection center in Sequoia-Kings Canyon National Park was found to extend beyond the boundaries mapped in 1972; however, many of the rust cankers found to be actively sporulating in 1972, were inactive this season. On the basis of this extensive sample, there appears to be no significant increase in rust occurrence in the southern Sierra Nevada.

DWARF MISTLETOE EVALUATION. During 1973 a two-person crew began a survey to determine the effects of dwarf mistletoe on the longevity of Jeffrey pine in recreation sites. The crew tagged, rated, and mapped 1,000 trees at Laguna Campground on the Cleveland National Forest, and surveyed the first 355 trees on a 1,000-tree plot at Nevada Beach Campground in the Lake Tahoe Basin Management Unit.

Whenever a plot tree dies, technicians on the Districts or Units where the plots are located will record the year of death, age at death, and cause of death. At the completion of the study, incidence of tree death will be analysed in relation to tree size class, dwarf mistletoe rating class, and growth characteristics which may affect the longevity of infected trees. These data will aid the Forest Service in developing guidelines to help recreation managers assess the impact of dwarf mistletoe in campgrounds and other recreation sites.

A crew will establish more survey plots in 1974. The Nevada Beach plot will be completed, another 1,000-tree plot added in the Lake Tahoe Basin, and a 2,000-tree plot set up on the Lassen National Forest. Ponderosa pine plots may be established later, depending upon the results from the Jeffrey pine survey.

At Laguna Campground on the Cleveland National Forest, a forestry aid measures an increment core to determine the 10-year radial growth rate of a dwarf mistletoe-infected Jeffrey pine.

TABLE II

FOREST DISEASES REPORTED - 1973

CAUSAL AGENT	HOST	COUNTY
RUSTS		
Cronartium ribicola	SP	Siskiyou
	SP	Tulare
	WWP	Siskiyou
Peridermium harknessii	PP	Fresno
FOLIAGE DISEASES		
Lophodermium durilabrum	FP	Siskiyou
MISTLETOES		
Dwarf Mistletoe	FP	Siskiyou
	JP	Kern
	SP	Ventura
HEART ROTS		
Fomes ignarius	QA	Shasta
ROOT DISEASES		
Armillaria mellea	BB	Inyo
	Ch	San Diego
	O	Riverside
	P	San Bernardino
	SB	Inyo
Fomes annosus	JP	Ventura (2)
	WF	El Dorado (4)
	WF	Kern
	WF	Tuolumne (2)
Verticicladiella wagenerii	DF	Humboldt
	DF/PP/ SP	El Dorado
Unknown	DF	Sonoma
	MP	Riverside
NURSERY DISEASES		
Botrytis cinerea	CRw	Humboldt
	MxK	Los Angeles
Botrytis cinerea	MxK	Placerville
	MxK	San Diego
	PP	Placerville (2)
	SRw	Humboldt
Fusarium lateritium	CRw	Humboldt
	SP	Placerville
Macrophomina phaseoli	SRw	Los Angeles
Phomopsis	DF	Humboldt
Pythium	DF	Humboldt
	DF	Riverside
	SRw	Riverside
Roselinea	DF	Humboldt
Sirococcus strobilinus	JP	Humboldt
	PP	Humboldt
MISCELLANEOUS		
Bacterium pseudotsugae	DF	Humboldt
Blue broom	SP	Shasta
Chemical	Ch	Los Angeles
	JP	Ventura
	Map	Marin
	MP	Los Angeles
Drought	Ch	Orange
Frost	CP	San Diego
	DF	Butte
	Eu	Sonoma
	IC	Siskiyou
	JP	Kern (2)
	LO	Siskiyou (2)
	Mad	Siskiyou (2)
	MP	Siskiyou
	MxK	Fresno
	PP	Butte
	PP	Siskiyou
Root bound	BP	Humboldt

Note: The numbers beside the county names indicate the number of reports received from that location.

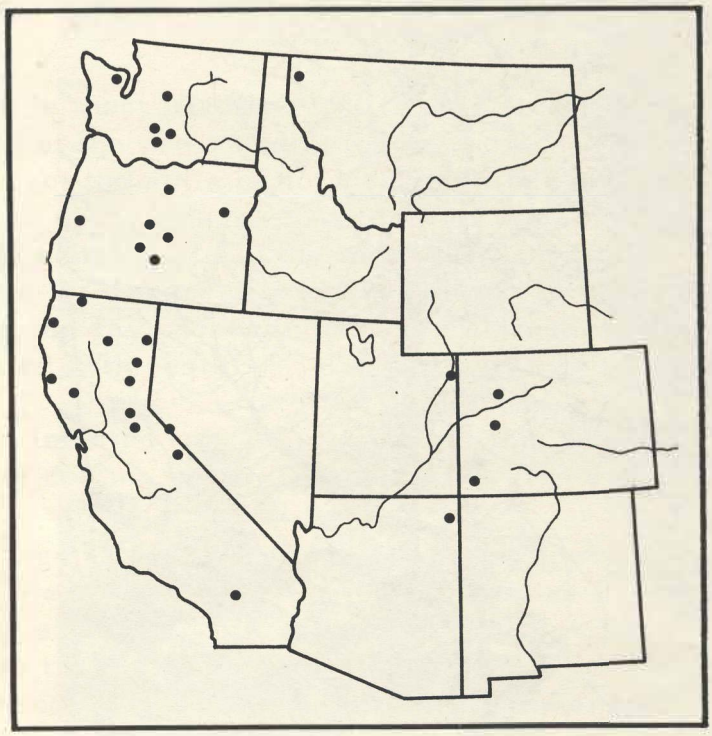
HOST ABBREVIATIONS

BB	Bitter brush	Eu	Eucalyptus	Map	Maple	QA	Quaking aspen
BP	Bishop pine	FP	Foxtail pine	MP	Monterey pine	SB	Sage brush
Ch	Chamise	IC	Incense cedar	MxK	Monterey x Knobcone	SP	Sugar Pine
CP	Coulter pine	JP	Jeffrey pine	O	Oak (unspecified)	SRw	Sierra redwood
CRw	Coast redwood	LO	Live oak	P	Pine (unspecified)	WF	White fir
DF	Douglas-fir	Mad	Madrone	PP	Ponderosa pine	WWP	Western white pine

BLACK STAIN ROOT DISEASE

The black stain root disease of conifers, caused by the fungus Verticicladiella wagenerii Kend., is a recently reported disease which is becoming more important in the coniferous forests of the western United States. Currently it is not causing significant losses in commercial forests, but pathologists are finding it to be more widespread than earlier studies had suggested. The disease has caused heavy losses to noncommercial species in some high-value recreation lands.

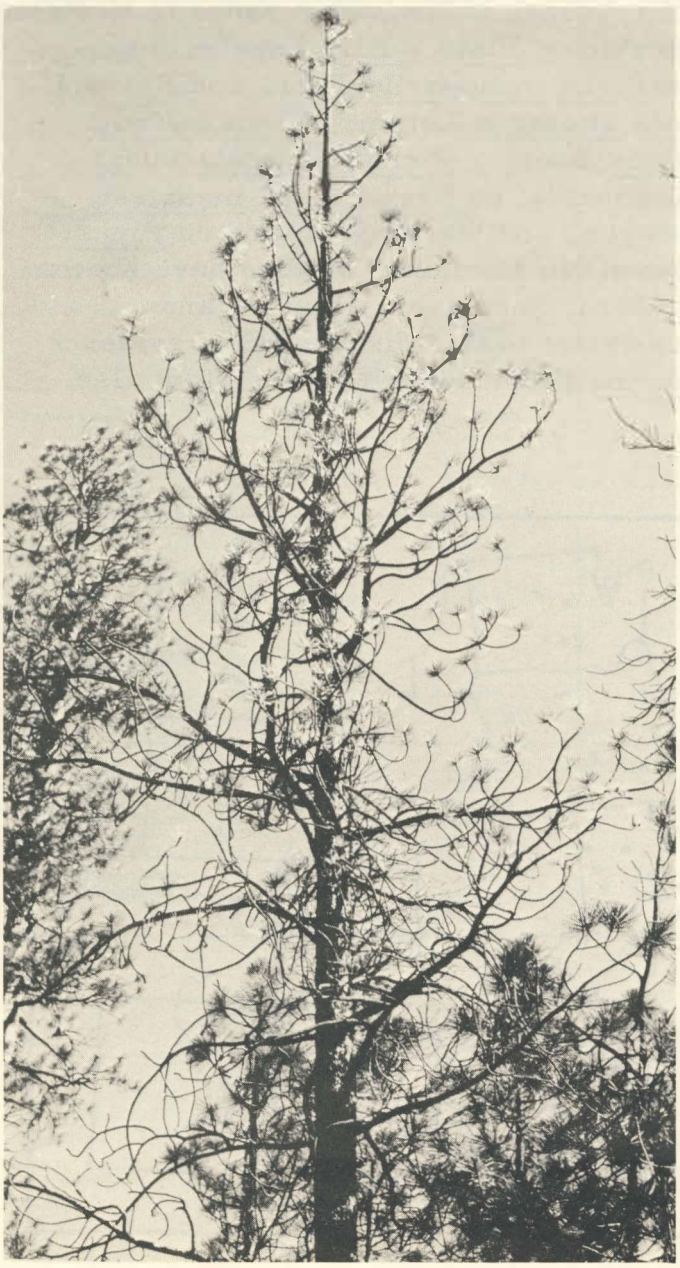
HOSTS AND DISTRIBUTION. The disease is limited in range to western North America. It has been reported on Pinus edulis Engelm. in Arizona, Colorado, and Utah; on Pinus monophylla Torr. and Frem. in California and Nevada; on Pinus attenuata Lemm., Pinus jeffreyi Grev. and Balf., Pinus lambertiana Dougl., Pinus monticola Dougl., and Pinus ponderosa Laws. in California; on Pseudotsuga menziesii (Mirb.) Franco in California, Oregon, and Washington; and on Pinus strobus L. and Pinus contorta Dougl. in Montana. Studies have shown that true firs -- Abies concolor (Gord. and Glenn.) Lindl., and A. magnifica A. Murr. -- are resistant to this disease; field evidence indicates that Juniperus osteosperma (Torr.) Little is resistant also.



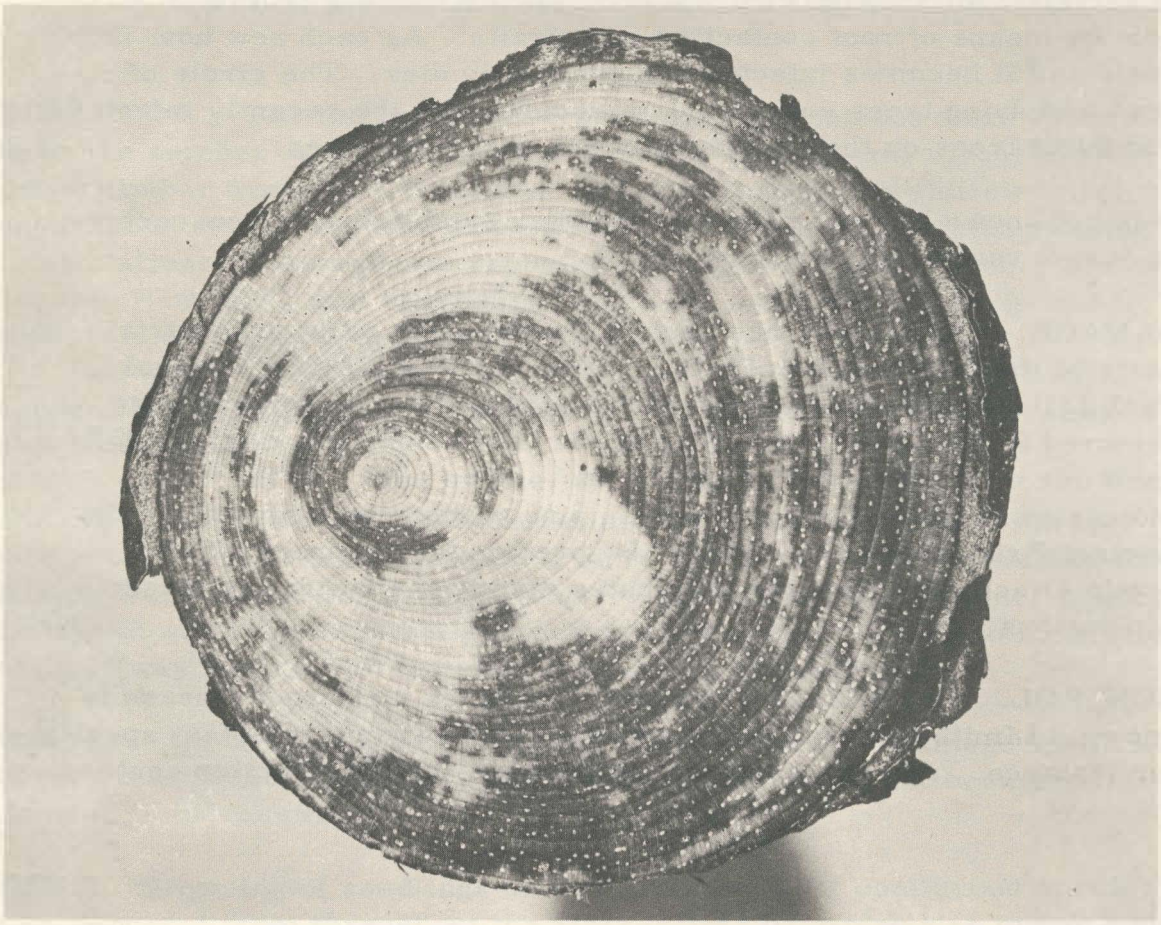
Distribution of the black stain root disease caused by Verticicladiella wagenerii in the forests of the western United States. Each dot represents a general area in which one or more centers of this root disease have been found.

Black stain root disease exists under a wide variety of environmental conditions. It is found in a region ranging from the hot, semi-arid areas of the southwest, to Pacific coastal areas receiving over 60 inches of rainfall annually. It also occurs in a wide variety of soils, from shallow rocky soils to deep clay loams. It has an altitudinal range from sea level up to 9,000 feet.

SYMPTOMS. Early symptoms of this disease are a reduction in terminal growth, chlorosis of the needles, reduced needle length, and reduced needle retention. The crown becomes thin and yellow, a condition also symptomatic of Annosus root disease and of Armillaria root rot.



An infected Jeffrey pine shows typical black stain root disease symptoms: a thin, chlorotic crown, short needles, poor needle retention, and reduced terminal growth.



A cross-section of singleleaf pinyon pine infected with Verticicladiella wagenerii shows how the black stain occurs in arcs that parallel the annual rings.

The black stain root disease is most readily identified as a chocolate to black stain in the sapwood of the roots and in the root crown. In a cross-section of a stem or root the stain is not wedge-shaped as in most blue stains, but tends to occur in arcs that parallel the annual rings. Most blue stain fungi concentrate in the medullary rays and advance along them, whereas V. wagenerii progresses through the trachieds and is not found in the ray parenchyma. The stained wood is usually heavily impregnated with resin.

Bark beetles often invade an infected tree before it dies; this attack tends to obscure the cause of death.

DISEASE CYCLE. The pathogen infects the sapwood of the roots, the root crown, and the lower bole of the coniferous hosts. There it causes a wilt type of disease similar to oak wilt and Dutch elm disease. The pathogen is restricted to the trachieds of the xylem cylinder and, until the tree dies, is not found in the cambial layer of the inner bark.

In established infection centers, the disease spreads from host to host by means of root contact or root grafts. As each new host is contacted it becomes infected and eventually dies. The circle of dead and dying trees enlarges as a result, with the recently infected and dying trees on the periphery of the infection center.

It is not known how the pathogen becomes established in new centers; an insect vector may be involved.

DAMAGE. The disease has caused considerable damage in certain parts of the southwestern United States. In Mesa Verde National Park 12,000 dead and dying trees infected with V. wagenerii were removed in 1933 and 1934. In southern California, the disease is epidemic on 8,000 acres of single leaf pinyon pine. In the White Mountains it has killed many pinyon pine within one-half mile of the Ancient Bristlecone Pine Area. By predisposing a tree to bark beetle attack, the disease contributes also to the buildup of insect populations.

CONTROL. No means of control for the black stain root disease is known. Limited control may be obtained by growing resistant species -- for instance, true firs or western juniper -- within infection centers.

STATUS AND CONTROL OF ANIMAL PESTS

PORCUPINE. For the third consecutive year porcupines were reported to be the number-one animal pest. Damage was general throughout the major timber areas of California. Serious damage was inflicted upon established stands and new plantations, with the greatest damage being to plantations. Damage was reported to be increasing in Modoc, Siskiyou, Shasta, Humboldt, and Mendocino Counties, and ranged from minor to moderate on the central inland forests.

Control has been achieved in several areas with the use of strychnine salt blocks and by hunting.

POCKET GOPHER. With the exception of the northern coast, damage was reported to be increasing statewide; major damage occurred on the Klamath and Modoc National Forests. Sugar pine, Jeffrey pine, ponderosa pine, and white fir were the species most damaged. Minor to moderate damage was reported in the southern portion of the State.

Use of the forest land burrow builder has rendered the damage static in those areas treated annually. Where the machine has not been used, damage is increasing.

DEER. Browsing of seedlings and saplings on most coniferous species was reported from throughout the State. Deer browsing was minor and widely scattered in central and southern California; in northern California damage was reported static to increasing, with the worst damage occurring in the coastal and northern inland forests. Deer depredation was greatest on Douglas-fir and ponderosa pine.

In the past, applications of Z.I.P. have alleviated the problem somewhat. Research efforts are now being directed toward repellent development and habitat modification.

MINOR SPECIES. The species listed below caused minor damage in the counties noted; although the damage was severe in some locations, it was localized and not widely scattered.

SPECIES	COUNTY
Rabbits	Mendocino, Lake, Ventura
Domestic stock	Shasta, Trinity, Humboldt
Ground squirrels	Los Angeles, Ventura
Tree squirrels	Los Angeles, Ventura, Sierra, Siskiyou, Nevada
Beaver	San Bernardino, Sierra, Del Norte, Fresno
Meadow mouse	San Bernardino
Black bear	Inyo, Humboldt

RESOLUTIONS OF THE COUNCIL, NOVEMBER 15, 1973

RESOLUTION NUMBER ONE:

BE IT RESOLVED that the California Department of Agriculture Regulation 3275, regarding European pine shoot moth exterior quarantine, stand unchanged.

FURTHER BE IT RESOLVED that the regulation be extended to include cut pine Christmas trees from infested areas.

RESOLUTION NUMBER TWO:

WHEREAS the Douglas-fir tussock moth is a serious westwide forest pest, the California Forest Pest Control Action Council strongly endorses Forest Service research and interagency participation on tussock moth population dynamics, pheromone identification, and microbial and chemical insecticides. We urge that the Forest Service make supplemental funds available for critically needed field studies and tests planned by the Pacific Northwest and Pacific Southwest Forest and Range Experiment Stations in 1974.

WE FURTHER recommend that pilot control tests of microbial alternatives to DDT be given highest priority in any planned control efforts against the Douglas-fir tussock moth in 1974.

RESOLUTION NUMBER THREE:

WHEREAS, there is a distinct difference in the occurrence and behavior of forest tree diseases in southern California compared to the northern portions of the State, and WHEREAS, there is currently no printed reference to aid in detection and diagnosis of conifer and broad leaf tree diseases under southern California conditions, and WHEREAS, Dr. Lowell Farmer has volunteered his considerable experience to partially complete a manuscript detailing the diagnosis of 87 infectious tree diseases and a number of abiotic diseases, and WHEREAS, costs will be incurred by Dr. Farmer for travel to State and Federal agencies in 1974 to gather photographs and reference material to complete the manuscript, and WHEREAS, costs will be incurred for the publication of the manual, the California Forest Pest Control Action Council, unanimously endorses the need for the proposed manual and recommends that financial support be sought by the Southern California Committee to effect completion and publication of "A Field Manual of Southern California Forest and Shade Tree Diseases."

THE COOPERATIVE FOREST PEST DETECTION SURVEY is sponsored by the California Forest Pest Control Action Council. Detection of damage due to insects, diseases, animals, weather, chemicals, and air pollution should be reported on the Forest Pest Detection Report, form R5-5200-33, or by card or letter. The Pest Action Council encourages Federal, State, and private land managers and individuals to contribute to the Detection Survey by submitting damage reports and samples in the following manner.

Forest Service Personnel: send detection reports through channels and mail all samples to the Regional Office -- U.S.D.A., Forest Service, Division of Timber Management, 630 Sansome Street, San Francisco, California 94111.

State Personnel: send all detection reports through channels; submit insect reports and damage samples to the CDF Headquarters -- California Division of Forestry, Department of Conservation, 1416-9th Street, Sacramento, California 95814 -- and mail all other reports and samples to the Forest Service Regional Office.

Private Foresters and Individuals: send insect detection reports and damage samples to CDF Headquarters, and all other reports and samples to the Forest Service Regional Office.

Please submit adequate damage samples illustrating the problem with each detection report. Keep samples cool and ship them immediately after collection; send samples in a screw-top mailing tube or in other suitable container.

All detection reports will be acknowledged and evaluated by specialists concerned with damage caused by forests pests.

Additional copies of the Forest Pest Detection Report form are available from local offices of the Forest Service and the California Division of Forestry.

YOUR COOPERATION WITH THE CALIFORNIA FOREST PEST CONTROL ACTION COUNCIL IN ASSISTING WITH THE COOPERATIVE FOREST PEST DETECTION SURVEY IS GREATLY NEEDED AND APPRECIATED.